

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-33. (Cancelled).

34. (New) A milk extraction machinery sensor apparatus, the milk extraction machinery including a plurality of extraction elements, the sensor apparatus including:
a single collection line connected to the plurality of extraction elements, wherein the plurality of extraction elements extract milk into the single collection line;
a sensor associated with the single collection line, wherein the sensor detects at least one of an indicator of mastitis, a compound, a component, a contaminant, and a pathogen of the extracted milk; and
a controller that controls:
activation and timing of the extraction elements,
the sensor; and
a delay period,
wherein the extraction elements are activated in at least one of a cyclical, a sequential, and a random manner,
wherein the controller activates a single extraction element or pair of extraction elements and the sensor senses extracted milk from the activated extraction element or elements, followed by the controller entering delay period to allow the extracted milk to drain from the single collection line, and

wherein the activating, sensing, and delay period are repeated for one or more additional extraction elements.

35. (New) The sensor apparatus of claim 34, wherein all of the extracted milk passes through the single collection line.

36. (New) The sensor apparatus of claim 34, wherein the sensor measures electrical conductivity.

37. (New) The sensor apparatus of claim 34, wherein foremilk is extracted by the plurality of extraction elements.

38. (New) The sensor apparatus of claim 34, wherein each of the extraction elements comprise a single teatcup associated with a single pulsator line.

39. (New) The sensor apparatus of claim 38, wherein the controller comprises a pulsator controller.

40. (New) The sensor apparatus of claim 39, wherein the teatcups are activated by activating a pulsator valve associated with the pulsator line to apply a cyclic change in air pressure.

41. (New) The sensor apparatus of claim 40, wherein there is a threshold vacuum level having a negative air pressure required to activate the teatcups, below which milk is extracted and delivered to the single collection line.

42. (New) The sensor apparatus of claim 41, wherein at least one of the teatcups is pulsated by a cyclic change in air pressure above the threshold level.

43. (New) The sensor apparatus of claim 34, wherein only one of the plurality of extraction elements is activated at one time.

44. (New) The sensor apparatus of claim 34, wherein a pair of the plurality of extraction elements are activated at one time.

45. (New) The sensor apparatus of claim 34, wherein the controller sequentially activates the plurality of extraction elements.

46. (New) The sensor apparatus of claim 34, wherein the controller randomly activates the extraction element or elements.

47. (New) The sensor apparatus of claim 34, further comprising an indicator that receives an output signal from the sensor, wherein the indicator signals an alarm to indicate that the sensor has detected abnormal milk.

48. (New) The sensor apparatus of claim 47, further comprising a diversion system associated with the indicator to isolate abnormal milk.

49. (New) The sensor apparatus of claim 47, wherein milk abnormalities are detected through a comparison between a sensor output signal indicating a value of the extracted milk from an udder quarter or half, and a sensor output signal indicating the value of the extracted milk from other quarters or half of the same udder by an alternative extraction element or elements.

50. (New) The sensor apparatus of claim 47, wherein a rolling average of sensor readings is used to detect abnormalities in the milk extracted.

51. (New) A sensor apparatus for milk extraction machinery, the milk extraction machinery including a plurality of extraction elements, the sensor apparatus including:

a single collection line connected to the plurality of extraction elements, wherein the plurality of extraction elements extract milk into the single collection line;

a sensor associated with the single collection line, wherein the sensor detects milk abnormalities by comparing a sensor output signal indicating a value of the milk extracted from an udder quarter or half by an extraction element or elements and a sensor output signal indicating the value of the milk from other quarters or half of the same udder by an alternative extraction element or elements; and

a controller that controls:

activation and timing of the extraction elements,

the sensor, and

a delay period,

wherein the controller activates a single extraction element or pair of extraction elements and the sensor senses extracted milk from the activated extraction element or elements, and

wherein the activating, sensing, and delay period are repeated for one or more additional extraction elements.

52. (New) The sensor apparatus of claim 51, wherein the sensor measures electrical conductivity.

53. (New) The sensor apparatus of claim 52, further comprising an indicator that receives an indication of milk abnormality, and wherein the indicator signals an alarm to indicate that the sensor has detected abnormal milk.

54. (New) The sensor apparatus of claim 53, further including a diversion system associated with the indicator to isolate abnormal milk.

55. (New) A sensor apparatus for milk extraction machinery, the milk extraction machinery including a plurality of extraction elements, the sensor apparatus including:

a single collection line connected to the plurality of extraction elements, wherein the plurality of extraction elements extract milk into the single collection line;

a sensor associated with the single collection line, wherein the sensor detects milk abnormalities by comparing a sensor output signal indicating a value of the milk extracted from

an udder quarter or half by an extraction element or elements and a sensor output signal indicating the value of the milk from other quarters or half of the same udder by an alternative extraction element or elements; and

a controller that controls:

activation and timing of the extraction elements, and

the sensor,

wherein the controller activates a single extraction element or pair of extraction elements and the sensor senses extracted milk from the activated extraction element or elements, and wherein the activating and sensing are repeated for one or more additional extraction elements.